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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/699,127	10/30/2003	Hyun Woo Song	2013P115	4968

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EXAMINER	
PRENTY, MARK V	

ART UNIT	PAPER NUMBER
2822	

DATE MAILED: 08/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/699,127	SONG ET AL.	
	Examiner	Art Unit	
	MARK PRENTY	2822	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 June 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7,9-13 and 15* is/are rejected.

7)☒ Claim(s) *3,8,14,16 and 17* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *July 5, 2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

This Office Action is in response to the amendment filed on June 20, 2005.

Claim 3 is objected to because "AI_2O_3," "AIN" and "AION" should read "Al_2O_3," "AlN" and "AlON," respectively (see the specification at page 3, lines 13-15, and claim 3 as originally filed, for example, and note that the symbol for Aluminum is Al).

Claims 1, 3-7, 9, 11-13 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Choquette et al. (already of record United States Patent 5,493,577 – hereafter Choquette).

With respect to independent claim 1, Choquette discloses a semiconductor optical device (see the entire patent, including the Fig. 2 disclosure) comprising: a first semiconductor layer 20 (the lower one) of a first conductivity type (see column 10, lines 4-14) which is formed on a semiconductor substrate 12 and includes one or more material layers (note the paragraph bridging columns 12-13); a second semiconductor layer 18 which is formed on the first semiconductor layer and includes one or more material layers; and a third semiconductor layer 20 (the upper one) of a second conductivity type (see column 10, lines 4-14) which is formed on the second semiconductor layer and includes one or more material layers (note the paragraph bridging columns 12-13), wherein one or more layers among the first semiconductor layer, the second semiconductor layer and the third semiconductor layer have a mesa structure, a lateral portion of at least one of the material layers constituting the first semiconductor layer, the second semiconductor layer, and the third semiconductor layer is recessed, and the recess is wholly filled with an oxide layer (i.e., layers 20 have oxidized portions, which is structurally tantamount to their having recesses wholly filled

with an oxide layer), and the first semiconductor layer and the third semiconductor layer serve as confinement-conducting regions (see column 10, lines 15-18, for example, and note that "carder" should apparently read "carrier").

Claim 1 is thus rejected under 35 U.S.C. 102(b) as being anticipated by Choquette.

With respect to dependent claim 3, Choquette's oxide layer is formed of Al_2O_3 (i.e., oxidized aluminum - see column 9, lines 22-24).

Claim 3 is thus rejected under 35 U.S.C. 102(b) as being anticipated by Choquette.

With respect to dependent claim 4, when Choquette's first (lower) semiconductor layer 20 is a p-type semiconductor layer, the third (upper) semiconductor layer 20 is an n-type semiconductor layer and when the first semiconductor layer is an n-type semiconductor layer, the third semiconductor layer is a p-type semiconductor layer (see column 6, lines 46-54, together with column 10, lines 4-14).

Claim 4 is thus rejected under 35 U.S.C. 102(b) as being anticipated by Choquette.

With respect to dependent claim 5, Choquette's second semiconductor layer 18 is one of a p-type semiconductor layer, an n-type semiconductor layer, and an undoped semiconductor layer (see column 8, lines 17-25).

Claim 5 is thus rejected under 35 U.S.C. 102(b) as being anticipated by Choquette.

With respect to dependent claim 6, Choquette's second semiconductor layer 18 is a gain region.

Claim 6 is thus rejected under 35 U.S.C. 102(b) as being anticipated by Choquette.

With respect to dependent claim 7, Choquette's device further comprises at least one reflecting mirror 14 formed so as to be parallel with the first semiconductor layer through the third semiconductor layer such that output light is perpendicular to the first semiconductor layer through the third semiconductor layer (see Fig. 2).

Claim 7 is thus rejected under 35 U.S.C. 102(b) as being anticipated by Choquette.

With respect to independent claim 9, Choquette discloses a semiconductor optical device (see the entire patent, including the Fig. 2 disclosure) comprising: confinement-conducting regions having semiconductor layers 20 (see column 10, lines 15-18, for example, and note that "carder" should apparently read "carrier"), each of which includes one or more material layers (note the paragraph bridging columns 12-13); and a gain region 18 having a semiconductor layer, which is formed between the confinement-conducting regions and includes one or more material layers, wherein the confinement-conducting regions and the gain region have a mesa structure, and a lateral portion of at least one of the material layers constituting the semiconductor layers of the confinement-conducting regions and the gain region is recessed, and the recess is partially or wholly filled with an oxide layer, a nitride layer or a combination of them

(i.e., layers 20 have oxidized portions, which is structurally tantamount to their having recesses wholly filled with an oxide layer).

Claim 9 is thus rejected under 35 U.S.C. 102(b) as being anticipated by Choquette.

With respect to dependent claim 11, Choquette's oxide layer is formed of Al_2O_3 (i.e., oxidized aluminum - see column 9, lines 22-24).

Claim 11 is thus rejected under 35 U.S.C. 102(b) as being anticipated by Choquette.

With respect to dependent claim 12, Choquette's semiconductor layers 20 constituting the confinement-conducting regions are one of a p-type semiconductor layer, an n-type semiconductor layer and a combination of them (see column 6, lines 46-54, together with column 10, lines 4-14).

Claim 12 is thus rejected under 35 U.S.C. 102(b) as being anticipated by Choquette.

With respect to dependent claim 13, Choquette's semiconductor layer 18 constituting the gain region is one of a p-type semiconductor layer, an n-type semiconductor layer, and an undoped semiconductor layer (see column 8, lines 17-25).

Claim 13 is thus rejected under 35 U.S.C. 102(b) as being anticipated by Choquette.

With respect to dependent claim 15, Choquette's device further comprises at least one reflecting mirror 14 formed so as to be parallel with the confinement-

conducting regions and the gain region such that output light is perpendicular to the confinement-conducting regions and the gain region (see Fig. 2).

Claim 15 is thus rejected under 35 U.S.C. 102(b) as being anticipated by Choquette.

Claim 2 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Choquette et al. (already of record United States Patent 5,493,577 – hereafter Choquette). Specifically, claim 2 depends on independent claim 1, which is rejected under 35 U.S.C. 102(b) as being anticipated by Choquette (see above). The above explanation of the rejection of independent claim 1 under 35 U.S.C. 102(b) as being anticipated by Choquette is hereby incorporated by reference into this rejection of dependent claim 2 under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Choquette. The difference, therefore, between device claim 2 and Choquette's device is a process one (i.e., their oxide layers are formed by atomic layer deposition and oxidation, respectively). Insofar as claim 2's oxide layer appears to be structurally the same as or similar to Choquette's oxide layer (in view of their similar use, for example), claim 2 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Choquette. See MPEP 2113.

Claim 10 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Choquette et al. (already of record United States Patent 5,493,577 – hereafter Choquette). Specifically, claim 10 depends on independent claim 9, which is rejected under 35 U.S.C. 102(b) as being anticipated

by Choquette (see above). The above explanation of the rejection of independent claim 9 under 35 U.S.C. 102(b) as being anticipated by Choquette is hereby incorporated by reference into this rejection of dependent claim 10 under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Choquette. The difference, therefore, between device claim 10 and Choquette's device is a process one (i.e., their oxide layers are formed by atomic layer deposition and oxidation, respectively). Insofar as claim 10's oxide layer appears to be structurally the same as or similar to Choquette's oxide layer (in view of their similar use, for example), claim 10 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Choquette. See MPEP 2113.

Claims 8, 14, 16 and 17 are objected to as being dependent upon a rejected base claim, but would be allowable over the prior art of record if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The applicants' arguments are somewhat moot in view of the restatement of the rejections based on Choquette. The still relevant arguments are addressed below.

The applicants' argument (on page 6): "However, because the control layer 20 does not include one or more material layers as recited in Claim [1], the control layers 20 also cannot anticipate the first and the third semiconductor layers," is unclear. Specifically, as explained in the restatement of the rejection of claim 1, claim 1's first and third semiconductor layers read on Choquette's Fig. 2 control layers 20, which clearly do "include one or more material layers," and the applicants' argument to the

contrary is unclear. If the applicants are arguing that Choquette's control layers 20 do not include more than one layer, such is incorrect. See Choquette at the paragraph bridging columns 12-13.

The applicants' argument (on page 6): "However, Choquette does not teach a recess partially or wholly filled with an oxide layer, a nitride layer, or a combination of them as recited in Claim 1. Choquette fails to even mention a filling process, or a recess filled with an oxide layer or a nitride layer," is incorrect. Specifically, as explained in the restatement of the rejection of claim 1, Choquette's layers 20 have oxidized portions, which is structurally tantamount to their having recesses wholly filled with an oxide layer.

Registered practitioners can telephone the examiner at (571) 272-1843. Any voicemail message left for the examiner must include the name and registration number of the registered practitioner calling, and the Application/Control (Serial) Number. Technology Center 2800's general telephone number is (571) 272-2800.

Mark Prenty

Mark V. Prenty
Primary Examiner